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Signed *Am. Brewer*

Dated 30 April 2003

THE PATENT OFFICE

23 APR 2002



23APR02 E713073-1 002748  
P01/7700 0.00-0209173.4

The Patent Office

# Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

23 APR 2002

Cardiff Road  
Newport  
South Wales  
NP10 8QQ

1. Your reference P0732

2. Patent application number 0209173.4  
(The Patent Office will fill in this part)

3. Full name, address and postcode of the or of each applicant (underline all surnames)  
Willearn Limited  
131 Silverbirch Road  
Kingshurst  
Birmingham B37 6AT  
Patents ADP number (if you know it) 8367971001  
If the applicant is a corporate body, give the country/state of its incorporation United Kingdom

4. Title of the invention  
SECURITY DEVICE FOR A DOOR

5. Name of your agent (if you have one)  
DEREK JACKSON ASSOCIATES  
"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)  
The Old Yard, Lower Town  
Claines  
Worcester WR3 7RY  
Patents ADP number (if you know it) 5600416002

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number	Country	Priority application number (if you know it)	Date of filing (day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application	Number of earlier application	Date of filing (day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

a) any applicant named in part 3 is not an inventor, or

b) there is an inventor who is not named as an applicant, or

c) any named applicant is a corporate body.

See note (d)) Yes

# Patents Form 1/77

Enter the number of sheets for any of the following items you are filing with this form.  
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Continuation sheets of this form

Description

15

Claim(s)

Abstract

Drawing(s)

9

+ 7 *RM*

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature

Date 22 Apr 2002

12. Name and daytime telephone number of person to contact in the United Kingdom

Derek Jackson - Tel : 01905 755180

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SECURITY DEVICE FOR A DOOR

This invention relates to a security device for a building and which is operable to limit opening of an inwardly-openable door in the building, particularly to prevent forced entry by an intruder while allowing sufficient opening of the door to enable identity of a person outside the door to be determined.

10 The present invention also provides for an alarm to be actuated when forced entry is attempted through the door.

According to the present invention there is provided a security device for limiting opening of an inwardly-openable door in a building, the device comprising keep means adapted to be secured to a region of an inside surface of the door, and arm means adapted to be swivelably secured at a first end thereof to an interior surface of the building fixed relative to the door, the arm means being adapted to be manually swivelled between a first position, clear of the door, and a second position in which a second end of the arm means abuttingly engages the keep means to limit opening of the door, at least one spring means being provided incorporated in the keep means and/or the arm means to

absorb energy upon engagement of the second end of the arm means with the keep means.

The spring means may additionally serve to recoil and  
5 effect or assist closure of the door in event of the door being undesirably jolted inwardly from outside.

The region of the inside surface of the door to which the keep means is adapted to be secured may be adjacent to a  
10 hinged edge of the door.

The interior surface of the building to which the arm means is adapted to be swivelably secured may be a wall of the building adjacent to a hinged edge of the door,  
15 and such as extending at substantially ninety degrees to the door when the door is closed. Intermediate support means, such as of block form, may be provided for securing to the wall and adapted to have the arm means swivelably secured thereto.

20

~~The keep means may comprise an elongate block adapted to be secured to the region of the inside surface of the door and having at a first end region thereof an outwardly open slot, such as of U shape, for receiving~~

~~25 the second end of the arm means.~~

The elongate block may be adapted to be secured to the region of the inside surface of the door by way of a first base plate to which it is secured, and which may be apertured to receive one or more securing means, such as  
5 one or more threaded fasteners.

The elongate block may incorporate an axial cylinder having an end open to the slot and in which is received a piston means and a first compression spring serving as  
10 the at least one spring means, the piston means being adapted to be contacted, and displaced to a limited extent in the cylinder against the first compression spring, by the second end of the arm means when forceful pressure is applied to the door to attempt opening of the  
15 door.

The piston means may have a first face provided with a recess for receiving the second end of the arm means and may have a second face, opposite the first face, provided  
20 with a protrusion for accommodating the first compression spring.

The outwardly open slot at the first end region of the elongate block may have an end portion sloping inwardly  
25 towards the piston means in the cylinder to direct the

second end of the arm means into alignment with the piston means and the cylinder.

The axial cylinder may extend through the elongate block  
5 to a second end region of the elongate block opposite to the first end region of the block and may be closed by a cap means, which may be threaded into or onto the second end region of the elongate block.

10 The arm means, at least at the second end thereof, may be of substantially solid cylindrical form.

The first end of the arm means may be provided with a bearing component, secured thereto or integral therewith,  
15 which is rotatable in a mounting component adapted to be secured to the interior surface of the building fixed relative to the door. The bearing component may be arranged for rotation in the mounting component about a substantially vertical axis, when the mounting component  
20 is secured to the interior surface of the building, and  
~~such that the arm means is able to be swivelled between~~  
~~the first and second positions in a substantially~~  
~~horizontal plane.~~

~~25 - The mounting component may comprise upper and lower~~

~~sections journaled to rotatably receive the arm means~~

component therebetween and secured to a second base plate which may be apertured to receive one or more securing means, such as one or more threaded fasteners.

- 5 A second compression spring may be incorporated with the arm means such that the first end of the arm means is slidably secured to the bearing component against the second compression spring and with the arm means displaceable in its axial direction relative to the
- 10 bearing component.

The second compression spring may reinforce or replace the function of the first compression spring.

- 15 Switch means may be incorporated in the bearing component and adapted to be actuated by axial displacement of the arm means relative to the bearing component against the second compression spring to operate an alarm means, such as an audible alarm means, to provide a warning that
- 20 forced entry through the door is being attempted. Such alarm means may be incorporated in a cavity in the mounting component, or may be at a remote location.

- One or more batteries may be incorporated in a cavity
- 25 provided in the mounting component, such cavity being



suitably closed by a cap means which may threadedly engage the mounting component.

The second compression spring may have a spring rate  
5 which is lower than that of the first compression spring, whereby the switch means is actuated before the first compression spring is fully compressed.

The device may substantially comprise metal, such as  
10 brass or aluminium. When the metal is aluminium, it may be surface-anodised.

For a better understanding of the present invention and  
to show more clearly how it may be carried into effect,  
15 reference will now be made, by way of example, to the accompanying drawings in which:

Figure 1 is a perspective view of an embodiment of a  
security device according to the present invention  
20 installed in association with a door in a building;

Figure 2 is a plan view of the security device of Figure  
1;

25 Figure 3 is an exploded view of keep means forming part  
of the security device of Figures 1 and 2;

Figure 4 is a perspective view of an elongate block in the keep means of Figure 3;

Figure 5 is a perspective view of the elongate block of Figure 4, showing a piston means provided in a cylinder thereof;

Figure 6 is a perspective view of the elongate block of Figure 5 secured to a base plate;

10

Figure 7 is an exploded view of swivelably-mounted arm means forming part of the security device of Figures 1 and 2;

15 Figure 8 is a perspective view of part of the arm means of Figure 7 mounted in a bearing component; and

Figure 9 is a perspective view of the assembled swivelably-mounted arm means of Figure 7, provided with an alarm means.

20

Referring to Figures 1 and 2, a security device 2 is provided for limiting opening of an inwardly-openable door 4 in a building. The device 2 has a keep means 6 adapted to be secured to a region of an inside surface 8

25

of the door 4, adjacent to a hinged edge 10 of the door 4.

The device 2 also has an arm means 12 which is adapted to be swivelably secured at a first end 14 thereof to an interior surface 16 of the building fixed relative to the door 4. The interior surface 16 of the building suitably comprises an internal wall of the building adjacent to the hinged edge 10 of the door 4 and suitably extending at substantially ninety degrees to the door 4 when the door is closed.

If required, where a suitable wall extending at ninety degrees is not available, an intermediate support means (not shown), such as of block form, may be provided for securing to the wall comprising the surface 16 and adapted to have the arm means 12 swivelably secured thereto.

The arm means 12 is arranged to be manually swivelled between a first position, as shown by the dotted outline in Figure 1, in which it is clear of the door, and a second position in which a second end 18 thereof abuttingly engages the keep means 6 to limit opening of

the door 4. In the first position of the arm means 12,

the door 4 is openable inwards in a normal unrestricted manner.

The arm means 12 is suitably of substantially solid  
5 cylindrical form, at least at the second end 18 thereof.

As will be described in detail hereinafter, at least one  
spring means is incorporated in the keep means 6 and/or  
the arm means 12 and operating in an axial direction of  
10 the arm means 12. Such spring means is or are arranged  
to absorb energy upon dynamic engagement of the second  
end 18 of the arm means 12 with the keep means 6 and  
reduces the likelihood of damage to the door 4 and its  
frame and hinges.

15

The spring means additionally serves or serve to recoil  
and effect or assist closure of the door 4 by effecting  
rebound of the door 4 in event of the door being  
undesirably jolted by an intruder attempting forcible  
20 entry from outside.

As will also be described in detail hereinafter, the  
security device 2 may be adapted to operate an alarm  
means when forcible entry through the door 4 is  
25 attempted.

The security device 2 of the present invention accordingly is readily arranged to allow complete freedom of opening of the door 4, when the arm means 12 is in the first position shown by the dotted outline in Figure 1, or allow only a predetermined limited extent of opening of the door 4 when the arm means 12 is abuttingly engaged with the keep means 6. Such predetermined limited extent of opening may be sufficient to provide a gap to allow identification of a person outside the door 4 and/or to permit receipt of items, such as mail, through the gap.

The security device 2 substantially comprises metal, such as brass or aluminium. When the metal is aluminium, its surface may be anodised.

15

Referring additionally now to Figures 3 to 6, the keep means 6 comprises an elongate block 20 secured to a first base plate 22 by means of threaded fasteners 24 passing through holes 26 in the first base plate 22 and into

20 threaded holes 28 provided in the elongate block 20. The

first base plate 22 is provided with holes 30 therein

through which screws 32 are passed for securing the keep

means 6 to the inside surface of the door 4.

The elongate block 20 is provided, at a first end region 34 thereof, with an outwardly open U-shaped slot 36 for receiving the second end 18 of the arm means 12.

5 The elongate block 20 incorporates an axial cylinder 38 (Figure 4) having an end open to the U-shaped slot 36 and in which is received a piston 40 and a first compression spring 42. The piston 40 has a first face 44 provided with a recess for abuttingly receiving the second end 18  
10 of the arm means 12 when the latter is located in the U-shaped slot 36.

The piston 40 also has a second face provided with a protrusion 46 which fits inside one end of the first  
15 compression spring 42.

The axial cylinder 38 extends through the elongate block 20 to a second end region 48 of the elongate block 20 and is closed by a cap means 50 which is threaded into, but  
20 could be threaded onto, the second end region 48 of the elongate block 20. The cap means 50 is provided with a protrusion 52 for locating in the first compression spring 42.

25 When the arm means 12 is engaged with the U-shaped slot 36, and forceful pressure is applied to the door 4 to

attempt to open the door, the second end 18 of the arm means abuttingly engages the recessed first face 44 of the piston 40 and displaces the piston 40 to a limited extent against the first compression spring 42, thus  
5 absorbing energy resulting from forcible movement of the door 4 and preventing damage to the door and its ancillaries, such as its frame and hinges.

The first compression spring 42 also recoils and has the  
10 effect of slamming shut the door 4 as an additional safety feature.

In order to assist alignment of the second end 18 of the arm means 12 with the piston 40, the outwardly open slot  
15 36 at the first end region 34 of the elongate block 20 may have an end portion 54 sloping inwardly towards the piston 40 to direct the second end 18 of the arm means 12 towards the piston 40.

20 Referring now to Figures 7 to 9, in addition to Figure 2,

~~the first end 14 of the arm means 12 is provided with a bearing component 56 which is rotatable in a mounting component comprising upper and lower portions 58 and 60.~~

~~The mounting component 58, 60 is secured to a second base~~

~~25 plate 62 by means of threaded fasteners 64 passing~~

~~through holes 66 in the second base plate 62. The upper~~

and lower portions 58, 60 comprising the mounting component are suitably journalled to rotatably receive the bearing component 56 therebetween, sealing rings 68, such as of rubber or neoprene being provided at the  
5 interfaces between the bearing component 56 and the mounting component 58, 60.

The second base plate 62 is provided with holes 70 by means of which the second base plate 62 is secured by  
10 screws 72 directly or indirectly to the interior surface 16, such as an inner wall, of the building.

The second base plate 62 with its assembled components is secured to the interior surface 16 of the building such  
15 that the bearing component 56 is rotatable in the mounting component 58, 60 about a substantially vertical axis and such that the arm means 12 is able to be swivelled between its first and second positions in a substantially horizontal plane.

20

A recess 74 is provided in the second base plate 62 to facilitate rotation of the bearing component 56.

A second compression spring 76 is arranged on a stepped  
25 portion 78 at the first end 14 of the arm means 12 and operating such that the first end 14 of the arm means 12



is slidably secured in a sleeve portion 80 of the bearing component 56 against the second compression spring 76.

With this arrangement, the arm means 12 is displaceable in its axial direction relative to the bearing component

5 56. A clip 82 engages a hole 84 in the stepped portion 78 at the first end 14 of the arm means 12 to retain the first end 14 of the arm means 12 in the bearing component 56.

10 A switch means 86 (Figure 9) can be incorporated in the bearing component 56 and adapted to be actuated by axial displacement of the arm means 12 relative to the bearing component 56 against the second compression spring 76, to operate an alarm means 88, such as a siren or other

15 audible alarm means, to provide a warning that forced entry through the door 4 is being attempted. Such an alarm means 88 can be incorporated in a cavity in the mounting component 58, 60, such as in the lower portion 60 of the mounting component. However, the alarm means

20 88 could be arranged at a remote location and/or could form part of a general security alarm system provided in the building.

~~One or more batteries 90 for powering the alarm means 88~~

~~25 - can be provided inside the mounting component 58, 60, --~~

~~such as in a cavity in the lower portion 60 of the~~

mounting component. Access to the battery or batteries 90 is suitably arranged by means of a cap 92 threadedly engaging the mounting component 58, 60.

- 5 The second compression spring 76 suitably has a spring rate which is lower than that of the first compression spring 42, whereby the switch 86 is actuated before the first compression spring 42 is fully compressed.
- 10 The second compression spring 76 may also reinforce or replace the function of the first compression spring 42.

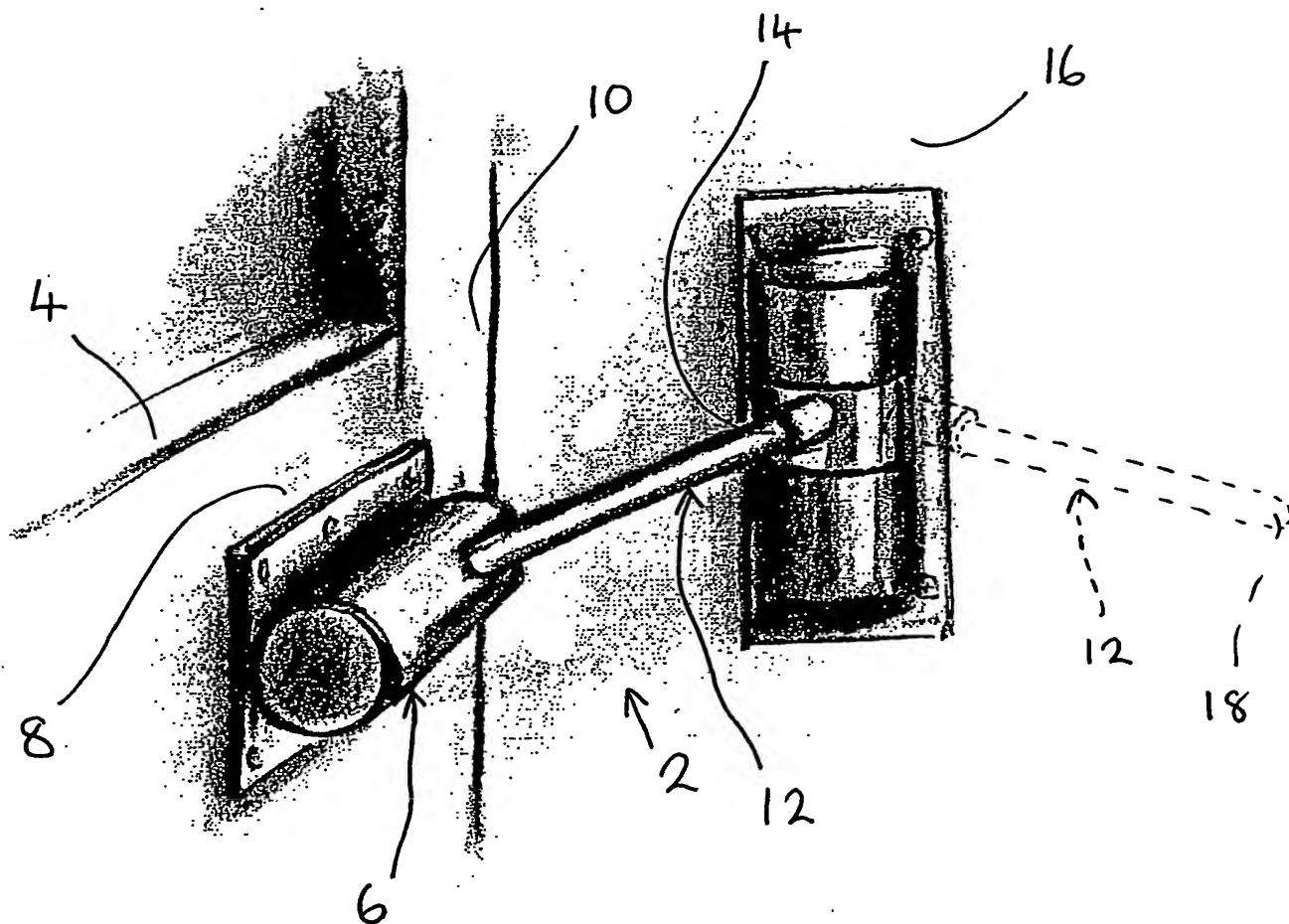


FIG. 1

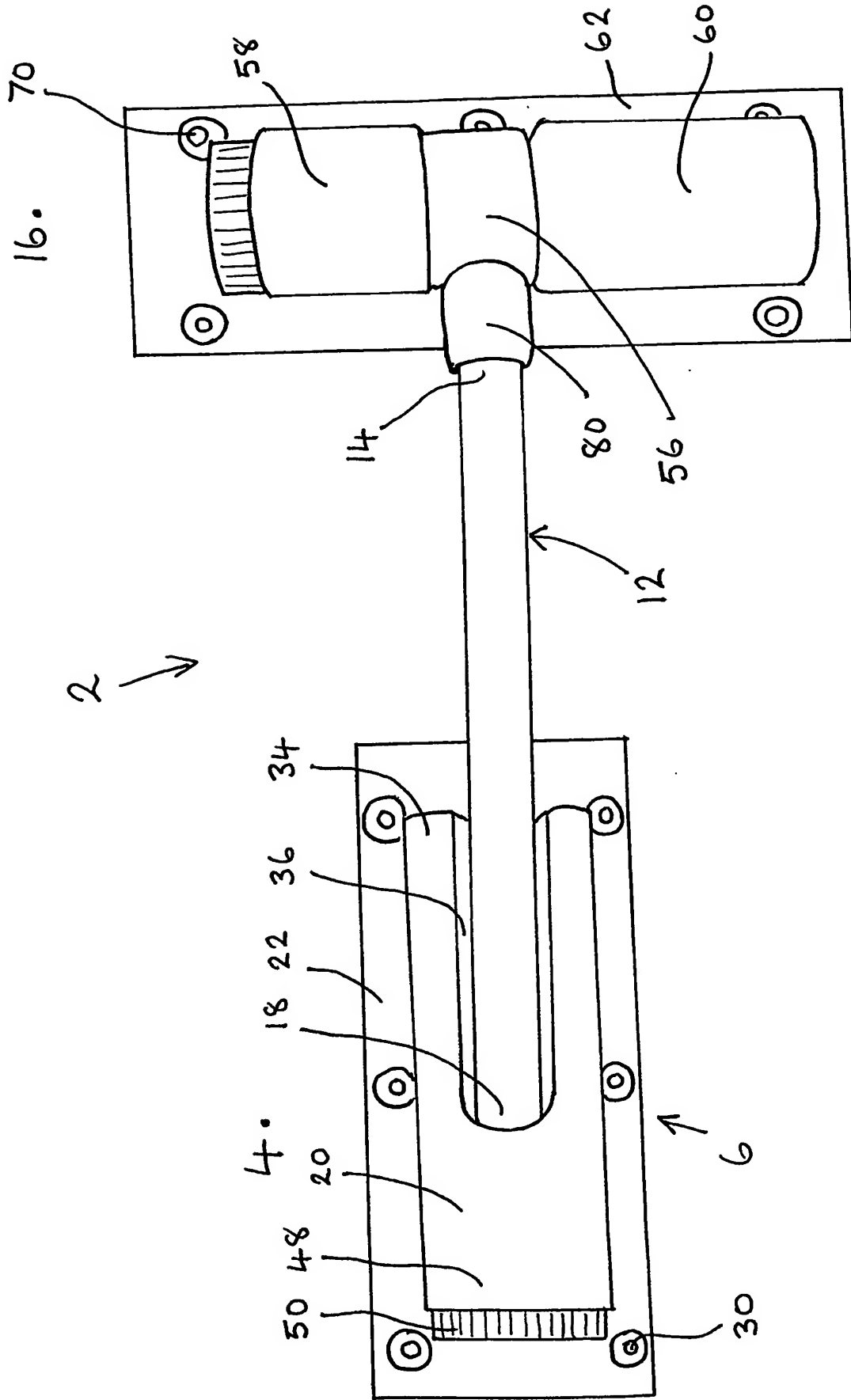


FIG. 2

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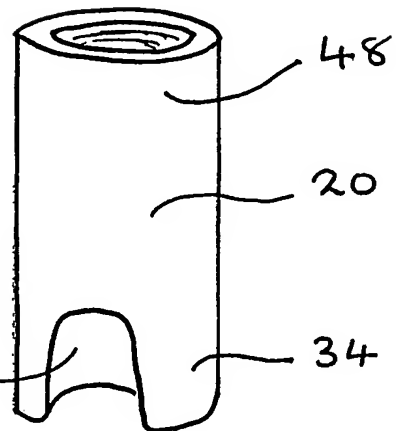
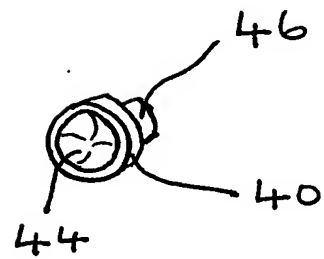
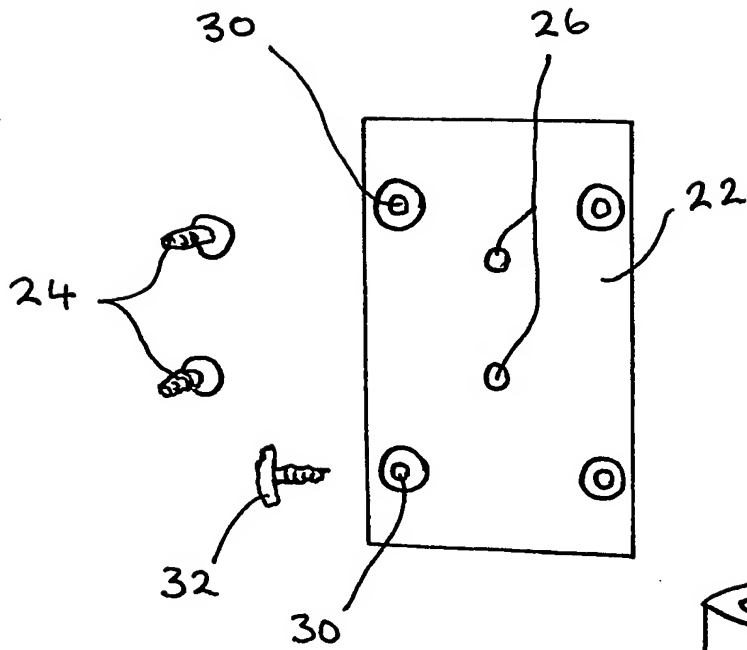
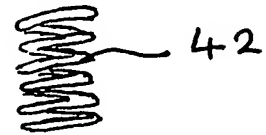
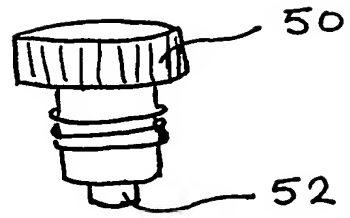


FIG. 3

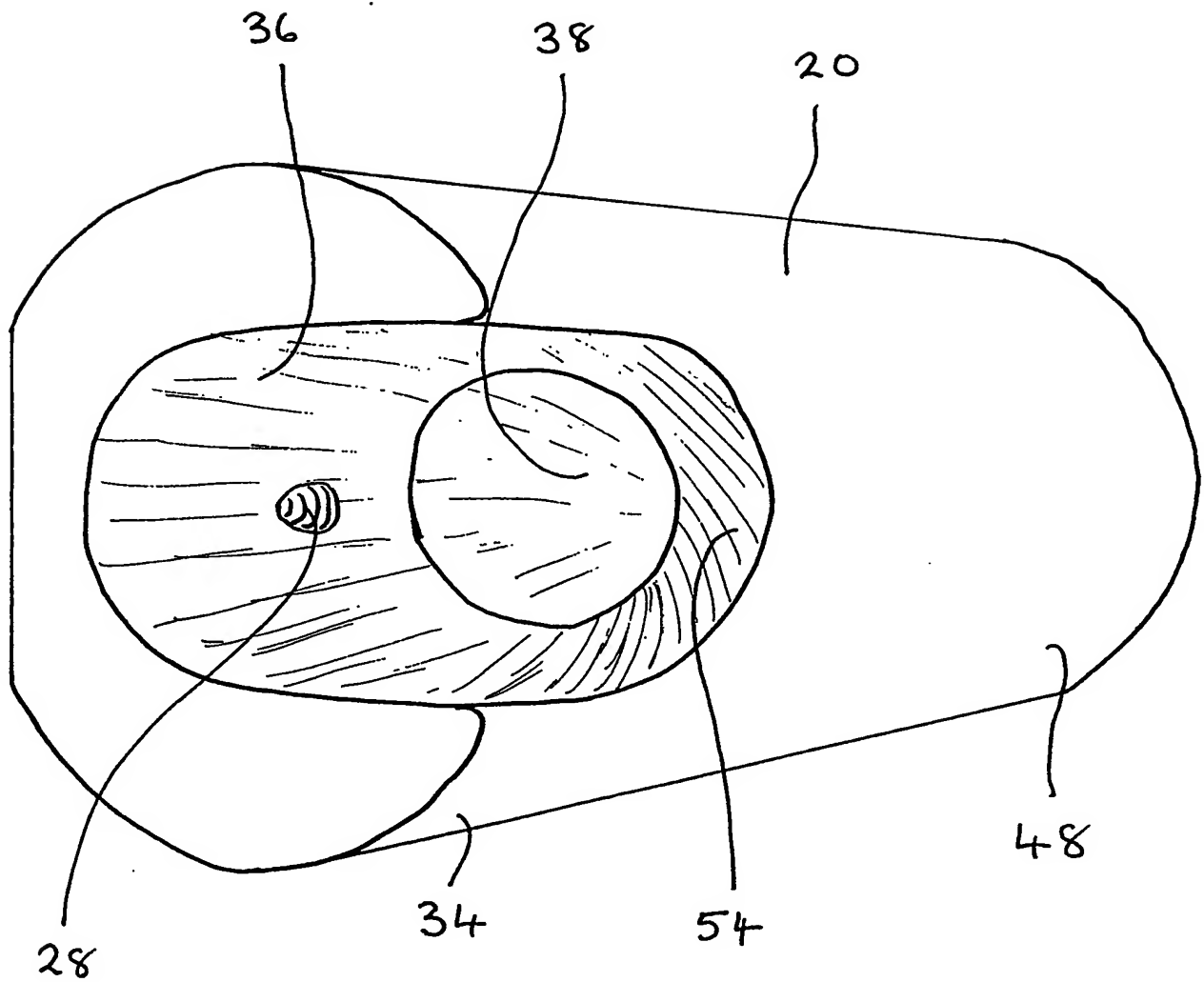


FIG. 4

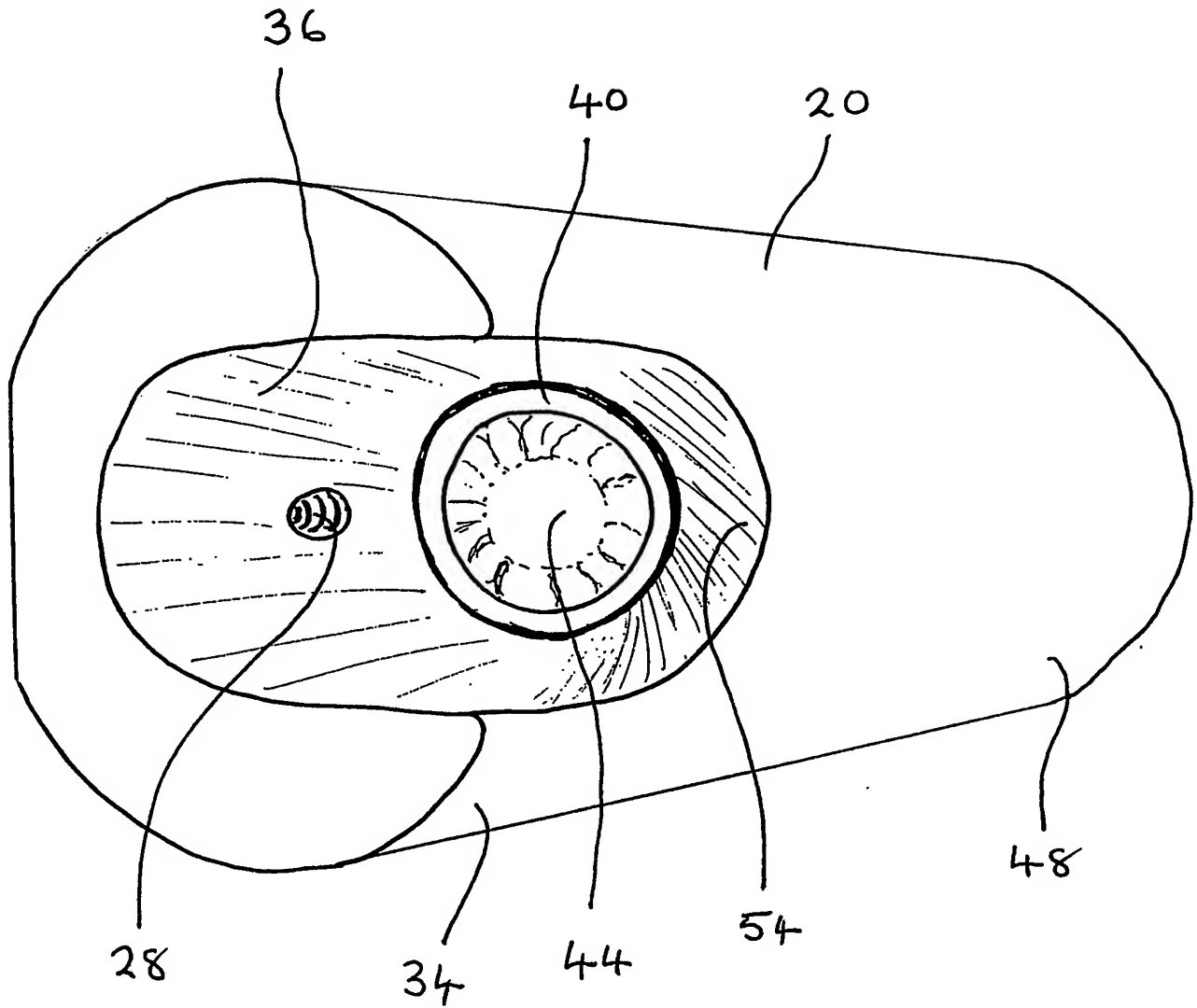


FIG. 5

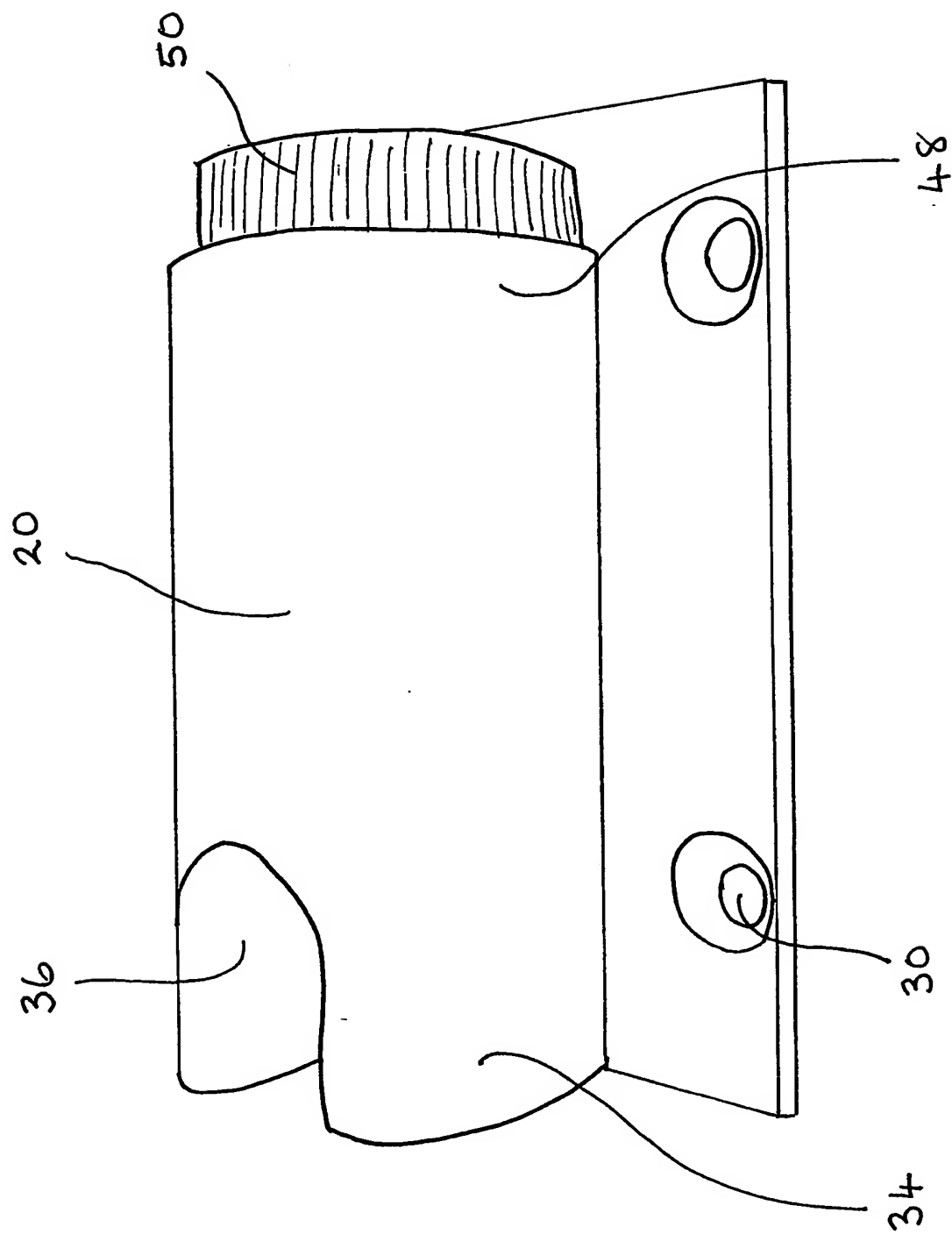


FIG. 6



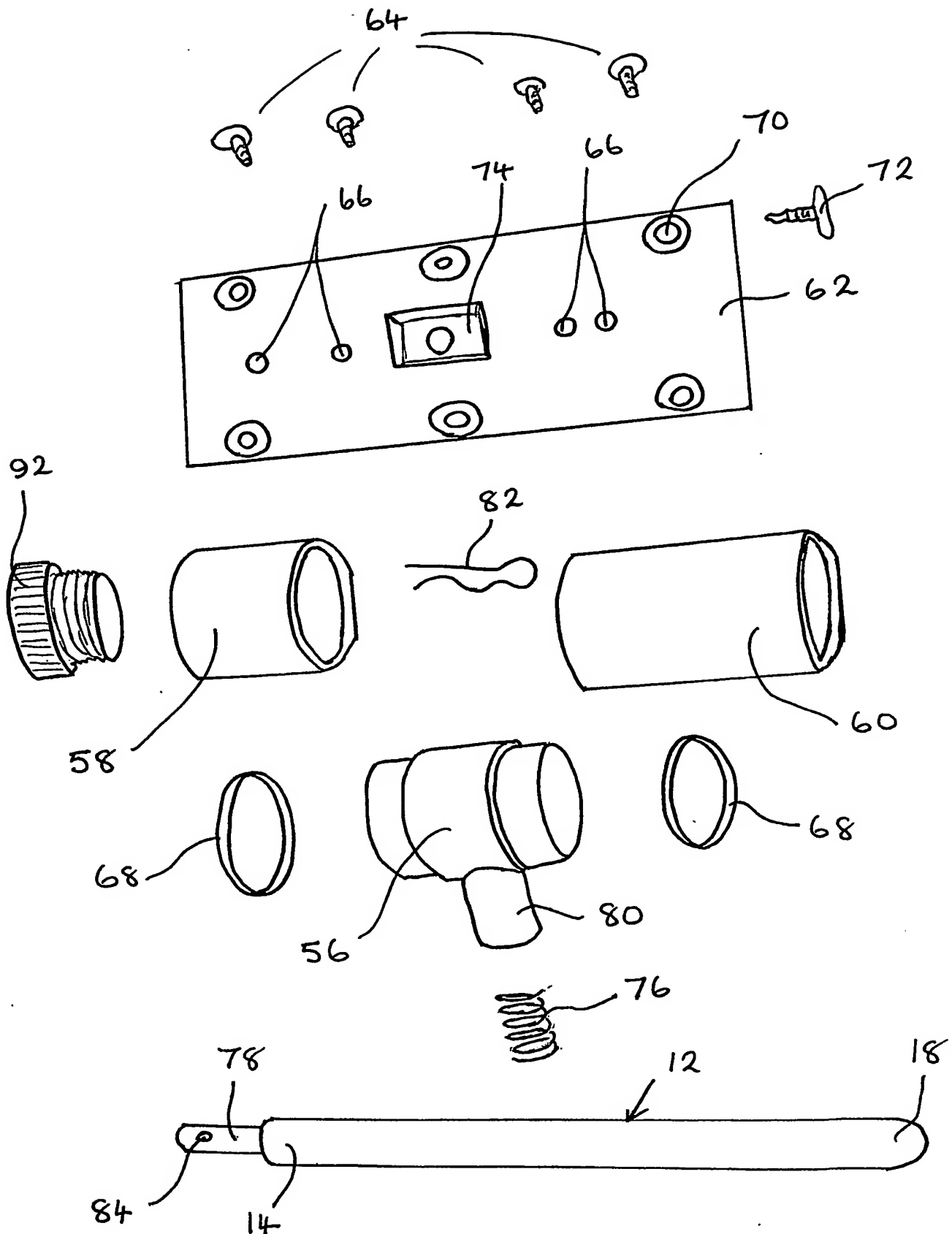


FIG. 7

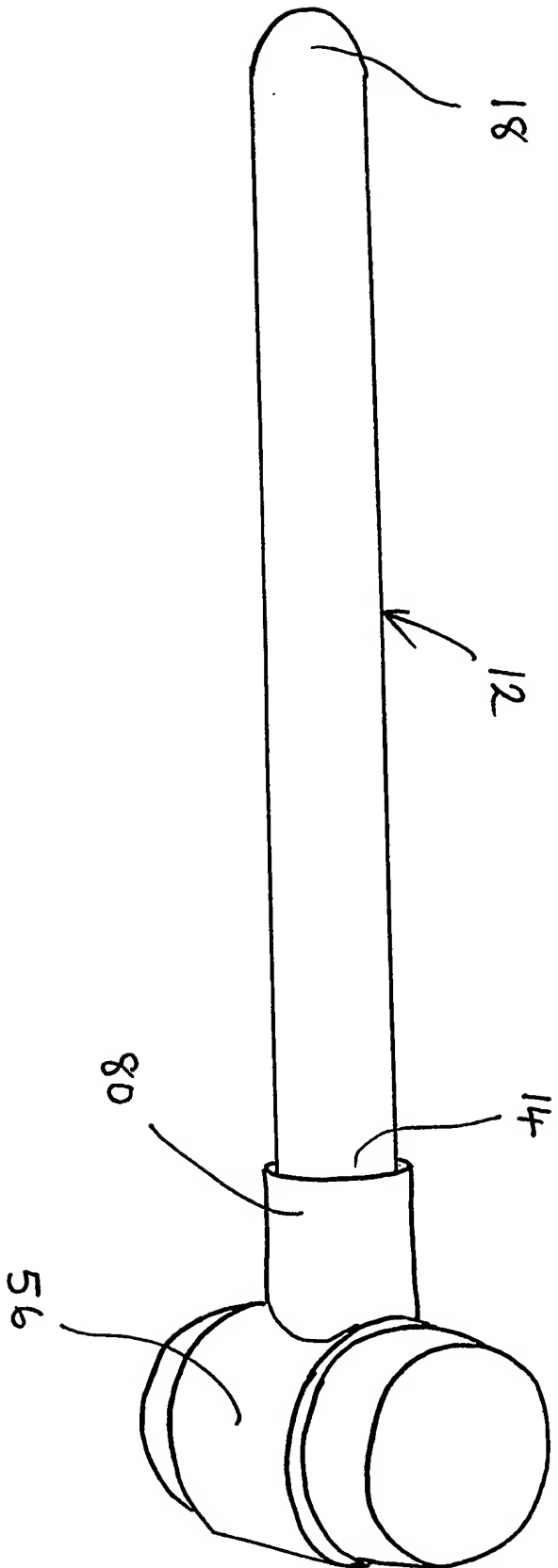


FIG. 8

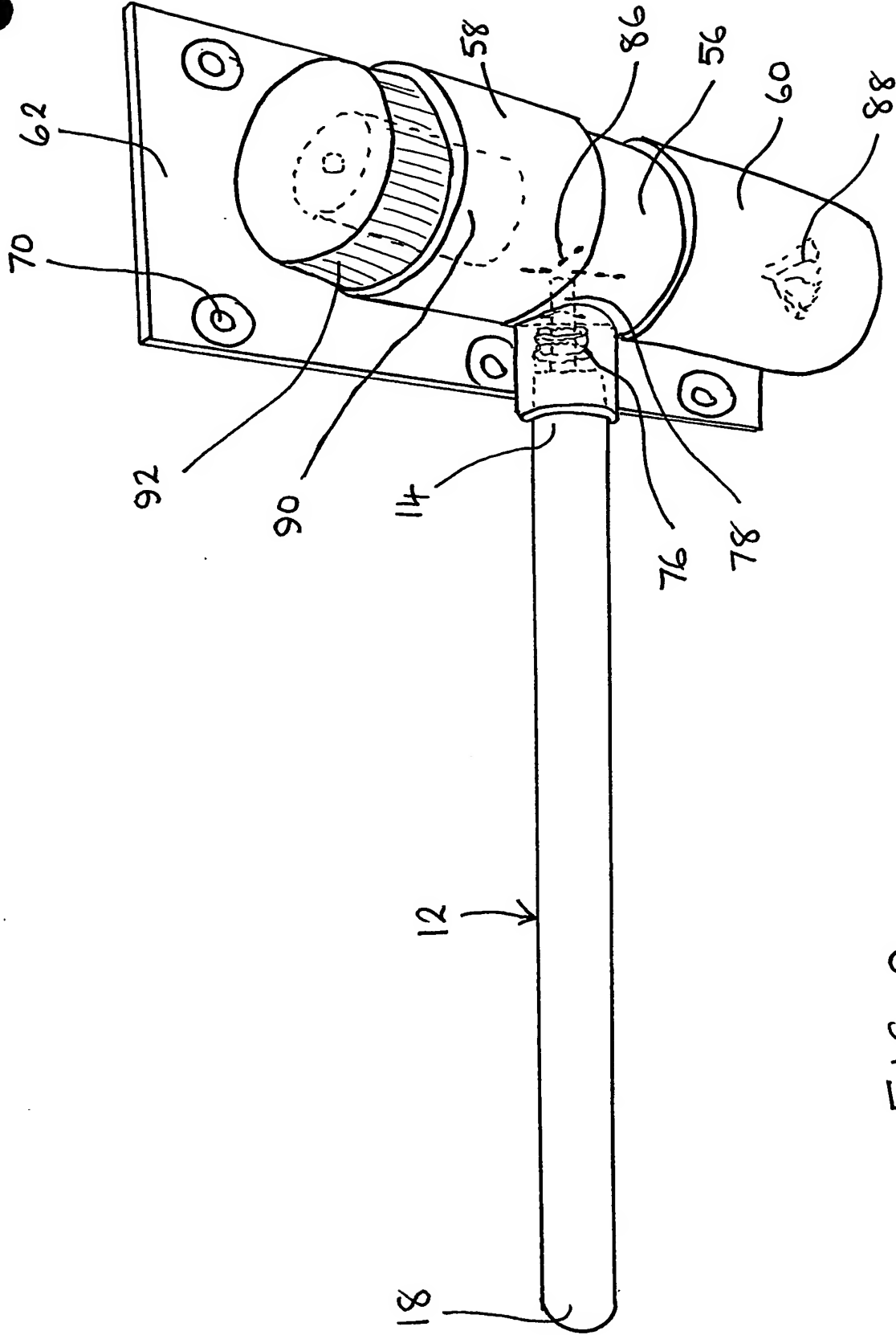


FIG. 9

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